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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MARSHALL & MELHORN, LLC			LAFOND, RONALD D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/814,873	Applicant(s) REMINGTON, MICHAEL P.	
	Examiner Ronald D. Lafond	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The Amendments of September 27, 2007, have been received and were entered. Claims 9 – 12 are acknowledged as cancelled. This action is in response to original Claims 1 – 8 and 13, which are still pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ye (United States Patent 6,106,892) in view of Neuman, et al (United States Patent 5,599,387, hereafter Neuman).

4. Regarding Claim 1, Ye teaches a process for depositing a silica coating upon a heated glass substrate, comprising: a) providing a heated glass substrate having a surface upon which the coating is to be deposited (see Column 7, lines 1 – 5); and b) directing a precursor mixture comprising a silane and a phosphorous compound toward and along the surface to be coated, and reacting the mixture at or near the surface to form a silica coating on the surface of the glass substrate (see Column 7, lines 6 – 16). Ye also teaches that the precursor mixture further comprises an oxygen source (see Column 2, lines 46 – 49), a radical scavenger (see again Column 2, lines 46 – 49; applicant discloses and claims that ethylene is a radical scavenger), and an inert carrier gas (see Column 3, lines 7 – 8, and Table 1 of Ye).

Ye does not teach that the phosphorous compound is a phosphorous (V) compound. Ye states, in Column 3, lines 8 – 10, that "Where used, the accelerant, a phosphite ... ester, was injected into the heated gaseous mixture ..." The accelerant used by Ye, according to Table 1, is triethylphosphite (TEP). Therefore, it is clear from the language of the Specification that the phosphorous compound (phosphorous ester) claimed by Ye in Claim 1 is an accelerant. Neuman teaches, in Column 13, lines 60 – 65, and Column 14, lines 4 – 9, 15 – 19, 29 – 32, 53 – 55, and 58 – 59, that "Accelerants that can be

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used in the practice of the invention to increase the deposition rate of silicon oxide alone or in combination with another oxide, for example, tin oxide ... can be defined as follows: ... (4) Compounds of ... phosphorous ... having the following structural formulae: $(R')_3P$, ... $(R')_3P=O$, ... $(R')_5P$, ... wherein ... R' ... (are) selected from ... alkoxide(s) having ... preferably 1 to 4 carbon atoms, such as – $OCH_2CH_2CH_3$... examples of which compounds include but are not limited to triethylphosphite." $(R')_3P=O$ and $(R')_5P$ are pentavalent, phosphorous (V) compounds that Neuman teaches may be used as accelerants in lieu of triethylphosphite. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the present invention to have modified the process taught by Ye by using the phosphorous (V) compounds disclosed in Neuman as the accelerant instead of triethylphosphite, as Neuman teaches that all such accelerants are so capable.

5. Regarding Claims 2 and 3, the same analysis holds true. Ye does not teach that a phosphorous (V) ester or that triethylphosphate may be used as accelerants. However, Neuman teaches that just such compounds may be used as accelerants (e.g., $(R')_3P=O$, wherein $R' = -OCH_2CH_3$).

6. Regarding Claim 4, Ye teaches the process of Claim 1, wherein the silane is monosilane (see Table 1 and Claim 7). Regarding Claim 5, as discussed, Ye teaches that the inert carrier comprises nitrogen. Regarding Claim 6, as discussed, Ye teaches that ethylene is the radical scavenger.

7. Claims 7, 8, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ye in view of Neuman, and further in view of Soubeyrand (United States Patent 5,798,142).

8. Regarding Claim 7, Ye does not teach that the oxygen containing material/source is oxygen gas. However, Soubeyrand teaches that "pure oxygen may be utilized as the precursor component," (Column 5, line 57) in a silica deposition process in which "silane, a radical scavenger gas, oxygen and an inert carrier gas" (Claim 1 of Soubeyrand) are used, and specifically "wherein the radical scavenger gas is ethylene" (Claim 8 of Soubeyrand). Moreover, Soubeyrand teaches, in Column 5, lines 6 – 10, that "the precursors of the present invention also provide a coating having better uniformity and a lower refractive index, are less sensitive to glass temperature, and have a much higher silane conversion efficiency than the silane/ethylene/acetone system." Because Soubeyrand teaches that oxygen is a superior oxygen source for the deposition of silica on glass than other oxygen-containing source gases (i.e., acetone or

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carbon dioxide), and also demonstrates that oxygen has been successfully used as the oxygen source gas in a silica deposition process that utilizes a gas mixture further comprising monosilane, ethylene, and an inert carrier gas (nitrogen), it would have been obvious to one having ordinary skill in the art at the time of the present invention to have modified the method taught by Ye in view of Neuman by using oxygen as the oxygen source to have obtained these advantages.

9. Regarding Claim 8, Ye does not teach the exact combination of ranges of compositions of silane, oxygen, ethylene, and triethylphosphate as claimed in the current Application. Ye does teach, in Example 1 (see Table 1), that 1.2% silane, 15.2% oxygen source gas, 22.8% ethylene, and 0.01% triethylphosphite accelerant is one successful such combination. It has been held that, where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955), see also MPEP 2144.05 II-A), and, furthermore, that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), see also MPEP 2144.05 II-B). Therefore, it would have been obvious and would have involved only routine experimentation to one having ordinary skill in the art at the time of the present invention to have utilized and optimized the ranges taught by Ye in view of Neuman and Soubeyrand. (See also MPEP 2144.05 II, which states that, generally, differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical.)

10. Regarding Claim 13, Ye in view of Neuman does not teach that oxygen should be used as oxygen source gas. However, as discussed for Claim 7, Soubeyrand teaches that oxygen may successfully be used as the oxygen sources gas in a silica deposition process otherwise utilizing monosilane, ethylene, and nitrogen, and Neuman teaches that triethylphosphate may successfully be used as an accelerant in lieu of triethylphosphite. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the present invention to have modified the method taught by Ye in view of Neuman by using oxygen as the oxygen containing material to have obtained the advantages taught by Soubeyrand.

Response to Arguments

11. Applicant's arguments filed on September 27, 2007, have been fully considered but they are not persuasive.

12. Applicant argues that the combination of Ye and Neuman is improper, because Applicant believes that Neuman teaches that the use of Phosphorous (V) compounds as accelerants "is shown only in conjunction of the deposition of silicon + another metal, and not for the production of silica alone." However, as highlighted above in the rejection of Claim 1, Neuman specifically teaches, in Column 13, lines 61 – 65, that "accelerants can be used in the practice of the invention to increase the deposition rate of silicon oxide alone or in combination with another oxide, for example, tin oxide or other metal-containing compound." Therefore, contrary to Applicant's argument, Neuman does show the use of a Phosphorous V compound in the deposition of a silica layer, and therefore Claim 1 is obvious over Ye in view of Neuman.

13. Applicant further argues that Phosphorous (V) compounds are only one of a "laundry list" of potential accelerants taught by Neuman, that there is no suggestion as to any particular utility in the selection of a Phosphorous (V) compound, and that "there is nothing in the Neuman reference to determine the benefits of the use of that particular compound out of the list of all of the compounds disclosed therein." This argument is not persuasive. Neuman teaches not a generic 'laundry list,' but, instead, a detailed list of accelerants known in the silica deposition art, and specifically "compounds of nitrogen, phosphorous, boron, sulfur, and selenium" (see Column 14, lines 4 and 5). Neuman expressly teaches in Columns 13 and 14 that Phosphorous (V) compounds are operable as accelerants to increase the rate of deposition of silicon oxide alone. An express teaching may be based on a statement in the prior art reference such as an art recognized equivalence. See *Merck & Co. v. Biocraft Labs.*, 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989), and MPEP 2144.08. Moreover, the selection of a known material based on its suitability for its intended use supports a *prima facie* obviousness determination. See *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945), and MPEP 2144.07.

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14. Applicant finally argues that the use of a Phosphorous (V) compound has been found to have "especially beneficial results." However, this is also not persuasive. Applicant asserts that Paragraphs [0010] and [0011] of the Specification demonstrate such unexpected results. However, Paragraph [0010] merely states that "the use of a phosphorous (V) compound, specifically triethylphosphate, has been found to enhance the deposition of silica *from known silane/oxygen/radical scavenger deposition systems*," and not from silane/oxygen/radical scavenger/accelerant systems known in the art. That is, there is no evidence in the Specification that Phosphorous (V) compounds such as triethylphosphite actually provide unexpected results over the general class of accelerants known in the silica deposition art. The arguments of counsel cannot take the place of evidence in the record (see MPEP 716.01(c)). Because the Specification does not provide such evidence, evidence must be in the form of an affidavit or declaration (see MPEP 716.02(g)), and an affidavit or declaration must compare the claimed subject matter with the closest prior art to be effective to rebut a *prima facie* case of obviousness (see MPEP 716.02(e)).

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald D. Lafond whose telephone number is (571) 270-1878. The examiner can normally be reached on M - F, 9:30 AM - 6 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571) 272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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FRED J. PARKER
PRIMARY EXAMINER